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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,022	01/28/2002	Koji Uchimura	Q68273	2604
23373	7590	02/23/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			SIEFKE, SAMUEL P	
			ART UNIT	PAPER NUMBER
			1743	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/056,022

Applicant(s)

UCHIMURA, KOJI

Examiner

Samuel P Siefke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12/21/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 14-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/23/02</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election without traverse of Group I in the reply filed on 12/21/04 is acknowledged.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1,2,4-13** are rejected under 35 U.S.C. 102(b) as being anticipated by Che et al. (USPN 5,604,587).

Che discloses a waveguide that is in the form of a capillary having a reflective surface defined by a material having a refractive index of less than 1.33. Excitation light is transmitted axially into the liquid at an end of the waveguide. The excitation light is transmitted the length of the waveguide, by reflection from the reflective surface, causing the fluid to emit Raman spectra. The waveguide 10 is constituted by a suitably shaped vessel 12, for example a capillary, for containing a liquid core 14, i.e., an aqueous sample. Capillary 12 may be fabricated from glass, quartz, transparent polymers such as polymethyl methacrylate (PMMA), polyvinylidene fluoride (PVDF) and ethylene tetrafluoroethylene (ETFE), or similar materials. Commercially available fluorocarbon material having a refractive index which is suitable for use in the practice

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of the present invention is sold by the Dupont Company under the trademark "Teflon AF". An arrangement wherein reflection of excitation light occurs at the exterior surface 18 of capillary 12 also allows the interior surface 16 of the capillary to be modified to reduce the adhesion or retention of molecules in the liquid due to surface potential.

Referring to FIG. 1, the waveguide/cell 10 of a Raman spectrometer comprises a length of tubing defining a capillary 12 which may be wound (flexible) around a cylindrical form 20 for convenience. As shown in FIG. 2, the waveguide 10 is comprised of a long capillary 12 clad with a polymer material 38 having a refractive index lower than that of the sample liquid. The capillary wall and the sample liquid 14 together constitute the core. The cladding 38 should have a thickness of at least four (4) times the wavelength of the light to be propagated by the waveguide, i.e., a cladding thickness of 2  $\mu\text{m}$  to 3.6  $\mu\text{m}$  is appropriate, and may be applied by dipping, spraying or other means known in the art. The cladding 38 protects the capillary from degradation due to light, moisture, oxidation and environmental contaminants. Such degradation typically causes the capillary to become brittle. Therefore, a Raman cell manufactured in accordance with the present invention is more flexible than conventional Raman cells. For example a Raman cell manufactured in accordance with the present invention may be wound into a three inch coil since capillary 12 supports the disclosed circular cross-sectional shape of the cell, the physical strength requirement for the cladding material is reduced. A protective outer coating or jacket 42 of stainless steel or other suitable material may be employed to protect the cladding material from scratching and mechanical abrasion.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Che et al. (USPN 5,604,587) in view of Matsuura et al. (USPN 5,108,201).

Che discloses a waveguide as discussed above.

Che does not teach a reflection layer that is an air layer.

Matsuura teaches a polyimide optical waveguide FIG. 3 illustrates another example of a manufacturing method for ridge type optical waveguide in accordance with the present invention, wherein the polyimide layer having an index of refraction lower than the of the above described core layer 2 is first applied over substrate 1, after which steps identical to those of the example shown in FIG. 1 are carried out, starting

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with formation of the core layer 2 over the polyamide layer first applied over the substrate 1. In this way, a ridge type optical waveguide is fabricated having a lower cladding layer 6 consisting of the polyimide layer first applied over substrate 1, a core layer derived from the core layer 2, and an overlying air layer which acts as an upper cladding layer. It is known that an air layer can be used as a reflective layer in the art, therefore it would have been obvious to one having an ordinary skill in the art to modify the reflective layer of Che to use an air layer as the reflective layer because it is a known equivalence in the art.

### ***Conclusion***

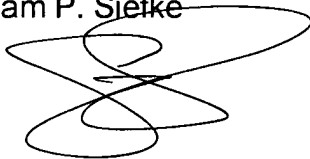
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel P Siefke whose telephone number is 571-272-1262. The examiner can normally be reached on M-F 7:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 571-272-1700. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

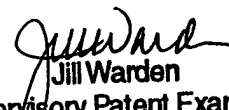
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam P. Siefke

A handwritten signature in black ink, consisting of a series of loops and curves, positioned below the name Sam P. Siefke.

February 18, 2005

A handwritten signature in black ink, appearing to read 'Jill Warden', positioned above the printed name and title.

Jill Warden  
Supervisory Patent Examiner  
Technology Center 1700